

REMARKS

Pursuant to the present amendment, claims 65 and 66 have been canceled. Thus, claims 1-30 and 56-64 are pending in the present application. No new matter has been introduced by way of the present amendment. Reconsideration of the present application is respectfully requested in view of the amendments and arguments set forth herein.

I. Initial Matters

In the Office Action, claims 65-66 were rejected under 35 U.S.C. § 112. Pursuant to the present amendment, claims 65-66 have been canceled. Withdrawal of the § 112 rejection is respectfully requested.

II. Prior Art Rejections

In the Office Action, claims 1-5, 7-11, 13-16, 18-21, 23-25, 27-29 and 56-64 were rejected under 35 U.S.C. § 102 as allegedly being anticipated by Wu (U.S. Patent No. 6,441,436). Claims 6, 17 and 26 were rejected under 35 U.S.C. § 103 as allegedly being obvious over Wu in view of Shigyo (U.S. Patent No. 5,760,442). Claims 12, 22 and 30 were rejected under 35 U.S.C. § 103 as allegedly being obvious over Wu. Applicants respectfully traverse the Examiner's rejections.

As the Examiner well knows, an anticipating reference by definition must disclose every limitation of the rejected claim in the same relationship to one another as set forth in the claim. *In re Bond*, 15 U.S.P.Q.2d 1566, 1567 (Fed. Cir. 1990). To the extent the Examiner relies on principles of inherency in making the anticipation rejections in the Office Action, inherency requires that the asserted proposition necessarily flow from the disclosure. *In re Oelrich*, 212

U.S.P.Q. 323, 326 (C.C.P.A. 1981); *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1463-64 (Bd. Pat. App. & Int. 1990); *Ex parte Skinner*, 2 U.S.P.Q.2d 1788, 1789 (Bd. Pat. App. & Int. 1987); *In re King*, 231 U.S.P.Q. 136, 138 (Fed. Cir. 1986). It is not enough that a reference could have, should have, or would have been used as the claimed invention. “The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *Oelrich*, at 326, quoting *Hansgirk v. Kemmer*, 40 U.S.P.Q. 665, 667 (C.C.P.A. 1939); *In re Rijckaert*, 28 U.S.P.Q.2d 1955, 1957 (Fed. Cir. 1993), quoting *Oelrich*, at 326; see also *Skinner*, at 1789. “Inherency ... may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *Skinner*, at 1789, citing *Oelrich*. Where anticipation is found through inherency, the Office’s burden of establishing *prima facie* anticipation includes the burden of providing “...some evidence or scientific reasoning to establish the reasonableness of the examiner’s belief that the functional limitation is an inherent characteristic of the prior art.” *Skinner* at 1789.

Moreover, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant’s disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); M.P.E.P. § 2142. Moreover, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490

F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). If an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988); M.P.E.P. § 2143.03.

With respect to alleged obviousness, there must be something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561 (Fed. Cir. 1986). In fact, the absence of a suggestion to combine is dispositive in an obviousness determination. *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573 (Fed. Cir. 1997). The mere fact that the prior art can be combined or modified does not make the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990); M.P.E.P. § 2143.01. The consistent criterion for determining obviousness is whether the prior art would have suggested to one of ordinary skill in the art that the process should be carried out and would have a reasonable likelihood of success, viewed in the light of the prior art. Both the suggestion and the expectation of success must be founded in the prior art, not in the Applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991; *In re O'Farrell*, 853 F.2d 894 (Fed. Cir. 1988); M.P.E.P. § 2142.

It is noted that the Examiner rejected the arguments set forth in Applicants' previous response. Specifically, the Examiner noted (Office Action, p. 5) that "the layer 101b is a portion of the SOI bulk substrate 100 (col. 2, lines 62-64)." Applicants request reconsideration of the present application and respectfully submit that the Examiner is either misunderstanding or misinterpreting the present invention and/or the prior art.

More specifically, SOI structures are well known in the art. As indicated in the specification, the bulk substrate depicted therein is comprised of a bulk substrate 12, a buried insulation layer 30 and an active layer 21. This description is consistent with the well-known structure of SOI substrates. See, *e.g.*, attached definition. It is respectfully submitted that, in rejecting the pending claims, the Examiner either confuses or contorts the structure depicted in Wu to conclude that such a structure is an SOI substrate, or inconsistently asserts that portions of the structure in Wu are different things depending upon the need for such structures to support the rejection.

In making the rejections (Office Action, p. 3), the Examiner identified the bulk substrate in Wu as being the combination of items 103, 102 and 101b, and the layer 101a as the active layer. The combination of items 104 and 212a were asserted to be the “multiple thickness buried oxide layer.” The Examiner also identified the item 101b as a doped back gate region. Respectfully, the Examiner’s reading and interpretation of Wu is believed to be incorrect.

Wu specifically states that the “SOI substrate 100 includes a silicon substrate 103, a buried oxide layer 102, and a P-type silicon layer 101.” Col. 2, ll. 62-64; Figure 3. Wu further states that “the SOI substrate 100 is a commercially available product formed by a SIMOX method....” Col. 2, ll. 65-67. Wu also states that “an oxygen ion implantation process 202 is then performed to form a silicon dioxide insulating layer 104 in the P-type silicon layer 101.” Col. 3, ll. 7-9. Note that Wu does not state that the silicon dioxide layer 104 was formed in the silicon substrate 103. Wu goes on to note that “the silicon layer 101 divides into an upper and lower layer, which are denoted as the first silicon layer 101a and the second silicon layer 101b, respectively.” Col. 2, ll. 13-15. In the discussion regarding Figure 5 (which does appear to

correspond to the disclosure), the substrate 100 is subjected to an oxygen implantation process 204 to form self-aligned oxygen-doped regions 212 in the second silicon layer 101b. Col. 3, l. 62 – Col. 4, l. 2. Thereafter, a heating process is performed to convert the oxygen-doped regions 212 into oxidation regions 212a. Wu also states that the second silicon layer 101b serves as a back gate electrode. Col. 3, ll. 15-16.

Independent claims 1, 13 and 23 all recite that the multiple thickness buried oxide layer is formed between the bulk substrate and the active layer and that the substantially planar upper surface of the buried oxide layer contacts the active layer and the non-planar lower surface of the buried oxide layer contacts the bulk substrate. It is respectfully submitted that these independent claims, as well as all claims depending therefrom, are allowable over Wu, considered individually or in combination with any other art of record.

According to the Examiner, the SOI substrate comprises the buried oxide layer 102 (as specifically defined in Wu) and a multiple thickness buried oxide layer (the combination of the silicon dioxide layer 104 and the oxidation regions 212a). That is, the Examiner asserts that the SOI substrate is Wu comprises two buried insulation layers. Not only is this contrary to the typical structure of SOI substrates, it is also contrary to the express teachings in Wu. Wu states that the SOI substrate 100 is comprised of the substrate 100, the buried oxide layer 102 and the layer of silicon 101. This is consistent with the present disclosure wherein the SOI substrate is comprised of the bulk substrate 12, the buried oxide layer 20 and the active layer 21.

It is believed that Wu does not anticipate nor render obvious the inventions defined in independent claims 1, 13 and 23 for a variety of reasons. Independent claims 1, 13 and 23 recite that the non-planar lower surface of the multiple thickness buried oxide layer contacts the bulk

substrate. This is clearly not the case in Wu. In Wu, the lower surface of the combination of the oxide layer 104 and the oxide regions 212a is formed in the active layer to thereby divide the active layer into two layers 101a and 101b. See, *e.g.*, Figure 5. That is, the lower surface of the “multiple thickness buried oxide layer” identified by the Examiner does not contact the bulk substrate 103 shown in Wu. As noted by Wu, the lower surface of the “multiple thickness buried oxide layer” contacts the layer 101b, which serves as a back gate electrode. Col. 3, ll. 15-16. As clearly seen in Figures 7, 8 and 9, the oxidation regions 212a do not contact the bulk substrate 103 of the device disclosed in Wu. Thus, there is no anticipation of independent claims 1, 13 and 23.

Moreover, it is respectfully submitted that the inventions set forth in independent claims 1, 13 and 23, and all claims depending therefrom, are not obvious in view of Wu, considered individually or in combination with any other art of record. There is certainly no suggestion in Wu that the oxidation regions 212a disclosed therein be positioned such that they contact the bulk substrate 103 disclosed in Wu. If anything, Wu can be said to teach away from such a configuration. There is simply no motivation suggested or disclosed in the art of record why one skilled in the art would be motivated to form the oxidation regions 212a disclosed in Wu at a deeper depth than what is depicted therein. Presumably, the device disclosed in Wu functions for its intended purpose. Thus, it is unclear why one skilled in the art would be motivated to position the oxidation regions 212a at a location other than that depicted in Wu, much less at the much deeper location so that the oxidation regions 212a would contact the bulk substrate 103. Even if Wu were combined with any other art of record, such a combination of prior would still not teach this limitation. Thus, any obviousness rejection based upon Wu would necessarily be

legally improper. A recent Federal Circuit case makes it crystal clear that, in an obviousness situation, the prior art must disclose each and every element of the claimed invention, and that any motivation to combine or modify the prior art must be based upon a suggestion in the prior art. *In re Lee*, 61 U.S.P.Q.2d 143 (Fed. Cir. 2002). Conclusory statements regarding common knowledge and common sense are insufficient to support a finding of obviousness. *Id.* at 1434-35. It is respectfully submitted that any attempt to assert that the inventions defined by the pending claims are obvious in view of the prior art of record constitutes an impermissible use of hindsight using Applicants' disclosure as a roadmap.

Independent claims 56, 58 and 60 likewise recite that the buried oxide layer is formed between the bulk substrate and the active layer and that the substantially planar upper surface of the buried oxide layer contacts the active layer and the non-planar lower surface of the buried oxide layer contacts the bulk substrate. Thus, it is believed that independent claims 56, 58 and 60, and all claims depending therefrom, are allowable over the art of record for at least the reasons set forth above with respect to independent claims 1, 13 and 23.

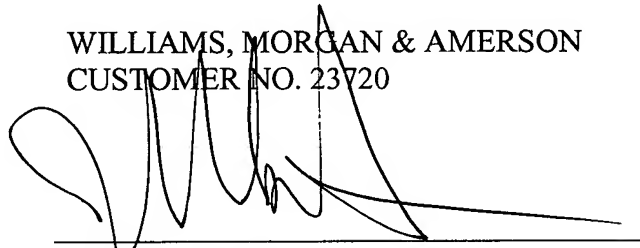
Independent claims 56, 58 and 60 further require the presence of a doped back gate region positioned at least partially in the bulk substrate under the buried oxide layer. It is believed that independent claims 56, 58 and 60 are allowable over the art of record for at least this additional reason. In Wu, it is clear that the active layer 101 is divided into a first silicon layer 101a and a second silicon layer 101b, wherein the second silicon layer 101b serves as a back gate electrode. Col. 3, ll. 13-16. However, it is also abundantly clear that the second silicon layer 101b is positioned above the layer 104 and is not formed at all in the bulk silicon layer 103. Thus, the device disclosed in Wu is in stark contrast to that now set forth in

independent claims 56, 58 and 60. As before, there is no suggestion to modify the teachings of Wu so as to arrive at the inventions set forth herein. Again, it is not understood why one skilled in the art would be motivated to undertake efforts to form a back gate electrode at a deeper depth than what is depicted in Wu, particularly beyond the insulating layer 104 described therein, as set forth in independent claims 56, 58 and 60. For at least these additional reasons, it is believe that independent claims 56, 58 and 60, and all claims depending therefrom, are in condition for immediate allowance.

For at least the aforementioned reasons, it is respectfully submitted that all pending claims are in condition for immediate allowance. The Examiner is invited to contact the undersigned attorney at (713) 934-4055 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

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A large, stylized handwritten signature in black ink, appearing to read 'J. Mike Amerson', is written over a horizontal line.

Date: January 10, 2006

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